

REMARKS

Claims 1-5 are pending in the application, with claim 2 having been withdrawn from consideration.

Claim 1 has been amended in order to more particularly point out, and distinctly claim the subject matter to which the applicant regards as his invention. It is believed that this Amendment is fully responsive to the Office Action dated **December 2, 2002**.

Claim Rejections under 35 USC §102

Claim 1 is rejected under 35 USC §102(e) as being anticipated by Hardesty et al. (U.S. Patent No. 6,138,056).

Hardesty et al. describes a process by which a computer measures and analyzes a machine operation. First, the time for traveling a certain distance is recorded and stored in a file along with the distance traveled. Stored in the program is appropriate information pertaining to different aspects of the machine operation, such as the time required to travel a certain distance. If the time to travel the distance is greater than the time stored in the reference value storage section, then maintenance is required. If maintenance work is required, there will be an indication on a display.

However, Hardesty does not disclose the maintenance system set forth in twice amended claim 1.

The maintenance system set forth in twice amended claim 1, comprises the judgement section for evaluating as least one of a temperature increase characteristic of the machine tool, a thermal displacement characteristic of the machine tool in accordance with the temperature increase, a vibration characteristic of the machine tool, and a noise characteristic of the machine.

But Hardesty et al. does not describe the above judgement section. Therefore, the maintenance system disclosed in Hardesty cannot evaluate and judge the static and/or dynamic characteristics of a machine tool, such as the temperature increase characteristic of the structure of the machine tool, the thermal displacement characteristic in accordance with the temperature increase, the vibration characteristic of the structure, and the noise characteristic caused by vibration.

Specifically, amended claim 1 patentably distinguishes over the prior art relied upon by reciting,

“A machine tool maintenance system for evaluating and controlling the static and/or dynamic characteristics of a machine tool having a main spindle unit and a feeder in trial operation of the machine tool, the machine tool maintenance system comprising: at least one of a temperature sensor for detecting the temperature of the machine tool, displacement sensor for detecting displacement of a predetermined portion of the machine tool, acceleration sensor for detecting the acceleration acting on the machine tool, and a noise meter for detecting noise caused by the machine tool; a reference value storage section for storing predetermined reference values indicative of standard conditions of the machine tool; a judgement section for evaluating at least one of a temperature increase characteristic of the machine tool, a thermal displacement characteristic of the machine tool in accordance with the temperature increase, a vibration characteristic of the machine tool, and a noise characteristic of the machine tool on the basis of a detection signal detected by the sensor and the reference values stored in the reference value storage section for judgement on the acceptability.” (Emphasis Added)

Therefore, withdrawal of the rejection of Claim 1 under 35 USC §102(e) as being anticipated by Hardesty et al. (U.S. Patent No. 6,138,056) is respectfully requested.

Claim Rejections under 35 USC §103

Claims 3 and 4 are rejected under 35 USC §103(a) as being unpatentable over Hardesty et al. as applied to claim 1 above and in view of Love et al. (U.S. Patent No. 5,629,871).

Claim 5 is rejected under 35 USC §103(a) as being unpatentable over Hardesty et al. in view of Love et al. (U.S. Patent No. 5,629,871), as applied to claims 3 and 4 above, and further in view of Saito (U.S. Patent No. 4,644,426) and Ruh (U.S. Patent No. 4,458,893).

Love et al. discloses a dialysis machine. Saito disclose a floppy disk drive apparatus and Ruh discloses a sheet feeder.

However, the art to which the dialysis machine disclosed in Hardesty et al , the floppy disk drive apparatus disclosed, in Saito, and the sheet feeder disclosed in Saito pertains respectively, is different from the art to which the maintenance system set forth in claim 3, 4 or 5 and the maintenance system disclosed in Hardesty et al. pertains respectively.

Therefore, the maintenance system set forth in claim 3, 4 or 5, could not easily have been made by a person with ordinary skill in the art to which the invention pertains on the basis of Hardesty et al., Love et al., Saito and Ruh. Therefore, withdrawal of the rejection of Claims 3 and 4 under 35 USC §103(a) as being unpatentable over Hardesty et al. in view of Love et al. (U.S. Patent No. 5,629,871) is respectfully requested. Further, withdrawal of the rejection of Claim 5 under 35 USC §103(a) as being unpatentable over Hardesty et al. in view of Love et al. (U.S. Patent No.

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5,629,871) and further in view of Saito (U.S. Patent No. 4,644,426) and Ruh (U.S. Patent No. 4,458,893) is respectfully requested.

Conclusion

In view of the aforementioned amendments and accompanying remarks, claim 1, as amended, is in condition for allowance, which action, at an early date, is requested.

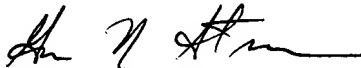
If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

Attached hereto is a marked-up version of the changes made to claim 1 by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, WESTERMAN & HATTORI, LLP



George N. Stevens
Attorney for Applicant
Reg. No. 36,938

GNS/alw

Atty. Docket No. **010923**
Suite 1000, 1725 K Street, N.W.
Washington, D.C. 20006
(202) 659-2930



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PATENT TRADEMARK OFFICE

Enclosures: Version with markings to show changes made

VERSION WITH MARKINGS TO SHOW CHANGES MADE 09/942,581

IN THE CLAIMS:

Please amend claim 1 as follows:

1. **(Twice Amended)** A machine tool maintenance system for evaluating and controlling the static and/or dynamic characteristics of a machine tool having a main spindle unit and a feeder in trial operation of the machine tool, the machine tool maintenance system comprising:

at least one of a temperature sensor for detecting the temperature of the machine tool, displacement sensor for detecting displacement of a predetermined portion of the machine tool, acceleration sensor for detecting the acceleration acting on the machine tool, and a noise meter for detecting noise caused by the machine tool;

[a sensor for detecting the static and/or dynamic characteristics of the machine tool;]

a reference value storage section for storing predetermined reference values indicative of standard conditions of the machine tool;

a judgement section for evaluating [the static and/or dynamic characteristics of the machine tool] at least one of a temperature increase characteristic of the machine tool, a thermal displacement characteristic of the machine tool in accordance with the temperature increase, a vibration characteristic of the machine tool, and a noise characteristic of the machine tool on the basis of a detection signal detected by the sensor and the reference values stored in the reference value storage section for judgement on the acceptability [of the characteristics; and

an output device for outputting a judgement result obtained by the judgement section,

wherein the sensor includes at least one of a rotation sensor for detecting the number of rotations of the main spindle, temperature sensor for detecting the temperature of the machine tool,

acceleration sensor for detecting the acceleration acting on the machine tool, displacement sensor for detecting displacement of a predetermined portion of the machine tool, and a noise meter for detecting noise caused by the machine tool].